

Claims 1 and 10-11 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,005,023 to Anton et al.

The Examiner asserts that, although Anton et al. does not disclose that styrene-maleic anhydride functions as a dispersant, given that the polymer is identical to that presently claimed, it is clear that the styrene maleic anhydride would inherently function as a dispersant (col. 2, lines 10-11 and 30, col. 3, lines 13-20 and 53-62, col. 4, lines 10 and 28-30, col. 5, lines 44-45 and 53-54, and col. 6, lines 45-50 and 54).

Claim Rejections under 35 U.S.C. §103

Claim 2 is rejected under 35 U.S.C. §103(a) as being unpatentable over Anton et al. in view of U.S. Patent No. 5,468,405 to Ma et al.

The Examiner asserts that the difference between Anton et al. and the present claimed invention is the requirement in the claims that styrene-maleic anhydride and methyl methacrylate/butyl acrylate/acrylic acid polymer are *random* copolymers. The Examiner asserts that Ma et al., which is drawn to ink jet inks, disclose that it is well known in the ink art to use polymer dispersants having random structures and that such dispersants are effective as well as easy and cheap to produce (col. 1, lines 57-65). The Examiner concludes that it would have been obvious to use styrene-maleic anhydride and methyl methacrylate/butyl acrylate/acrylic acid polymer with random structure in the ink of Anton et al., and thereby arrive at the claimed invention.

Claim 4 is rejected under 35 U.S.C. §103(a) as being unpatentable over Anton et al. in view of Zhu.

The Examiner asserts that the difference between Anton et al., and the present claimed invention is the requirement in the claims of surfactant of presently claimed formula VI, i.e. acetylene glycol. The Examiner asserts that Zhu, which is drawn to ink jet inks, discloses the use of acetylene glycol in order to prevent foaming of the ink during preparation as well as printing (col. 10, lines 12-18 and 31-44). The Examiner concludes that it would have been obvious to use such surfactant in the ink of Anton et al. in order to prevent ink from foaming during preparation and printing, and thereby arrive at the claimed invention.

Claim 5 is rejected under 35 U.S.C. §103(a) as being unpatentable over Anton et al. in view of either Zhu or U.S. Patent No. 6,114,411 to Nakamura et al.

The Examiner asserts that the difference between Anton et al. and the present claimed invention is the requirement in the claims of penetrating agent. The Examiner notes that Zhu, which is drawn to ink jet inks, disclose the use of penetrating agent such as ethylene glycol ethyl ether in order to increase the solubility or dispersibility of resin or pigment present in the ink (col. 8, lines 42-45 and 54-65). The Examiner notes that Nakamura et al., which is drawn to ink jet inks, disclose the use of penetrating agent such as ethylene glycol ethyl ether in order to enhance anti-nozzle clogging properties, moisture resistance and/or dispersion stability of the ink (col. 8, lines 51-57 and 64-68). The Examiner concludes that it would have been obvious to use such penetrating agent in the ink of Anton et al. in order to produce an ink with good pigment/resin dispersibility, or

alternatively, to enhance anti-nozzle clogging properties, moisture resistance and/or dispersion stability, and thereby arrive at the claimed invention.

Claim 8 is rejected under 35 U.S.C. §103(a) as being unpatentable over Zhu or Anton et al. either of which in view of U.S. Patent No. 5,954,866 to Ohta et al.

The Examiner asserts that the difference between Zhu or Anton et al. and the present invention is the requirement in the claims of sugar. The Examiner concludes that, in light of the motivation for using polysaccharide disclosed by Ohta et al., it would have been obvious to use polysaccharide in the ink of Zhu or Anton et al. in order to produce an ink with suitable viscosity and moisture retention, and thereby arrive at the claimed invention.

Claim 9 is rejected under 35 U.S.C. §103(a) as being unpatentable over Zhu or Anton et al. either of which in view of either U.S. Patent No. 6,329,446 to Sacripante et al. or U.S. Patent No. 6,239,193 to Cheng et al.

The Examiner asserts that the difference between Zhu or Anton et al. and the present claimed invention is the requirement in the claims of volume average particle size of the pigment. The Examiner concludes that, in light of the motivation for using pigment with specific volume average particle size disclosed by either Sacripante et al. or Cheng et al., it would have been obvious to use such pigment in the ink of either Zhu or Anton et al. in order to produce an ink that will not clog the printer nozzles.

Claims 1, 2, 5-8 and 10-11 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,274,646 to Watanabe et al. in view of Ohta et al.

The Examiner asserts that the primary difference between Watanabe et al. and the present claimed invention is the requirement in the claims of styrene-maleic anhydride. The Examiner concludes that, in light of the disclosure of Ohta et al. of the equivalence and interchangeability between styrene-maleic anhydride dispersant and styrene-maleic acid dispersant, it would have been obvious to use styrene-maleic anhydride dispersant in the ink of Watanabe et al., and thereby arrive at the claimed invention.

Response from Applicants

Applicants respectfully disagree with the above rejections, and herein submit an Inventor's Declaration that shows that the present invention produces unexpected results compared with that of the cited references, and further that the invention of the present application is patentably distinct from the product of the cited references.

The Examiner indicates that Claim 1, and Claims 3 to 7 and 10 to 11 depending from Claim 1 are anticipated by Zhu (U.S. 5,889,083). Further, the Examiner indicates that Claim 1, and Claims 10 to 11 depending from Claim 1 are anticipated by Anton et al.

However, Applicants respectfully submit the following arguments.

An ink composition of the claimed invention (Claim 1) is characterized in combination use of copolymer (I), i.e., methyl methacrylate-butyl acrylate-acrylic acid copolymer, and copolymer (II), i.e., styrene-maleic anhydride.

On the other hand, Zhu does not disclose the copolymer (I) used in the claimed invention. Namely, Zhu does not disclose combination use of the copolymer (I) and the copolymer (II).

Anton et al. also discloses neither the copolymer (I) nor the copolymer (II).

Therefore, the claimed invention is not identical to Zhu nor Anton et al. in the point of the combination use of the copolymer (I) and the copolymer (II). Accordingly, Claims 1, 3 to 7 and 10 to 11 are not anticipated by Zhu, and Claims 1 and 10 to 11 are not anticipated by Anton et al..

Additionally, the present invention achieves significantly unexpected results (excellent storage stability, discharging stability and adhesion) due to combination use of the copolymer (I) and the copolymer (II) in comparison with techniques in which the copolymer (I) or the copolymer (II) is used singly. Applicants are presently preparing Experimental data that will be forwarded shortly in an Inventors' Declaration, which proves that an ink composition of the present invention exhibits significantly excellent effects (excellent storage stability, discharging stability and adhesion).

The Examiner indicates that claim 2 is obvious from Anton et al. in view of Ma et al. (U.S. 5,648,495).

However, Applicants respectfully submit the following arguments.

Claim 2 is characterized in that the weight ratio of the copolymer (I) and the copolymer (II) is specified and both of the copolymer (I) and the copolymer (II) are random copolymers on condition of the combination use of the copolymer (I) and the copolymer (II). On the other hand, Anton et al. does not disclose the combination use of copolymer (I) and the copolymer (II). Therefore, in order to obtain an ink composition of the claimed invention, one skilled in the art

would not have been motivated to apply random copolymers of Ma et al. to Anton et al., and the claimed invention cannot be derived from Anton et al. and Ma et al. by the person skilled in the art, even if Ma et al. is applied to Anton et al..

Further, as noted above, the claimed invention achieves significantly unexpected results (excellent storage stability, discharging stability and adhesion) due to the combination use of the copolymer (I) and the copolymer (II) in comparison with techniques in which the copolymer (I) or the copolymer (II) is used singly. As noted above, Applicants are preparing an Inventors' Affidavit that proves this point. The Declaration will be forwarded shortly.

Therefore, Applicants submit that the claimed invention (Claim 2) would not have been obvious to the person skilled in the art from Anton et al. in view of Ma et al..

The Examiner indicates that Claim 4 is obvious from Anton et al. in view of Zhu (U.S. 5,889,083).

However, the Applicants respectfully submit the following arguments.

Claim 4 is characterized in containing a compound represented by the formula (VI) as the surface active agent on condition of combination use of the copolymer (I) and the copolymer (II). On the other hand, Anton et al. and Zhu do not disclose the combination use of the copolymer (I) and the copolymer (II). Therefore, in order to obtain an ink composition of the claimed invention, a person skilled in the art would not have been motivated to apply the compound represented by the formula (VI) of Zhu to Anton et al., and the claimed invention cannot be derived from Anton et al. and Zhu by the person skilled in the art, even if Zhu is applied to Anton et al..

Further, the claimed invention achieves significantly unexpected results(excellent storage stability, discharging stability and adhesion) due to the combination use of the copolymer (I) and the copolymer (II) in comparison with techniques in which the copolymer (I) or the copolymer (II) is used singly. As noted above, Applicants are preparing an Inventors' Affidavit that proves this point. The Declaration will be forwarded shortly.

Therefore, Applicants submit that the claimed invention (Claim 4) would not have been obvious to the person skilled in the art from Anton et al. in view of Zhu.

The Examiner indicates that Claim 5 is obvious from Anton et al. in view of Zhu or Nakamura et al. (U.S. 6,144,411).

However, Applicants respectfully submit the following arguments.

Claim 5 is characterized in that a penetrating solvent is further contained on condition of the combination use of the copolymer (I) and the copolymer (II). On the other hand, Anton et al. does not disclose the combination use of the copolymer (I) and the copolymer (II). Therefore, in order to obtain an ink composition of the claimed invention, one skilled in the art would not have been motivated to apply a penetrating solvent of Zhu or Nakamura et al. to Anton et al., and the claimed invention cannot be derived from Anton et al., Zhu and Nakamura et al. by the person skilled in the art, even if Zhu or Nakamura et al. is applied to Anton et al. Applicants further note the Inventor's Declaration, which will be forwarded shortly.

Therefore, Applicants submit that the claimed invention (Claim 5) would not have been obvious to the person skilled in the art from Anton et al. in view of Zhu or Nakamura et al..

The Examiner says that Claim 8 is obvious from Zhu or Anton et al. in view of Ohta et al. (U.S. 5,954,866).

However, Applicants respectfully submit the following arguments.

Claim 8 is characterized in that sugar is further contained on condition of the combination used of the copolymer (I) and the copolymer (II). On the other hand, Zhu and Anton et al. do not disclose the combination use of the copolymer (I) and the copolymer (II). Therefore, in order to obtain an ink composition of the claimed invention, it is not motivated to apply sugar to Ohta et al. to Zhu or Anton et al. even by the person skilled in the art, and the claimed invention cannot be derived from Anton et al., Zhu and Ohta et al. by the person skilled in the art, even if Ohta et al. is applied to Zhu or Anton et al..

Further, the claimed invention achieves significantly unexpected results as noted above. (excellent storage stability, discharging stability and adhesion) due to the combination use of the copolymer (I) and the copolymer (II) in comparison with techniques in which the copolymer (I) or the copolymer (ii) is used singly. As noted above, Applicants are preparing an Inventors' Affidavit that proves this point. The Declaration will be forwarded shortly.

Therefore, Applicants submit that the claimed invention (Claim 8) would not have been obvious to the person skilled in the art from Zhu or Anton et al. in view of Ohta et al..

The Examiner indicates that Claim 9 is obvious from Zhu or Anton et al. in view of Sacripante et al. (U.S. 6,329,446) or Cheng et al. (U.S. 6,239,193).

However, the Applicants respectfully submit the following arguments.

Claim 9 is characterized in that the volume average particle size of dispersed pigment is specified on condition of the combination used of the copolymer (I) and the copolymer (II). On the other hand, Zhu and Anton et al. do not disclose the combination use of the copolymer (I) and the copolymer (II). Therefore, in order to obtain an ink composition of the claimed invention, it is not motivated to apply the volume average particle size of Sacripante et al. to Zhu or Anton et al. even by the person skilled in the art, and the claimed invention cannot be derived from Zhu, Anton et al., Sacripante et al. and Cheng et al. by the person skilled in the art, even if Sacripante et al. or Cheng et al. is applied to Zhu or Anton et al..

Therefore, Applicants respectfully submit that the claimed invention (Claim 9) would not have been obvious to the person skilled in the art from Zhu or Anton et al. in view of Sacripante et al. or Cheng et al..

For at least the above reasons, Applicants respectfully submit that the present invention is patentably distinguishable from the cited references. Applicants earnestly request withdrawal of the rejections and passage of the claims to issue.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

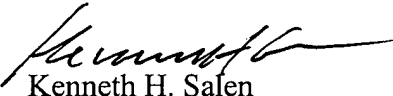
Response under 37 C.F.R. §1.111
Minoru WAKI et al.

U.S. Patent Application Serial No. 09/916,316
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In the event that this paper is not timely filed, Applicant respectfully petitions for an appropriate extension of time. The Commissioner is authorized to charge any fees that may be due with respect to this paper to Deposit Account No. 01-2340.

Respectfully submitted,

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